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ABSTRACT

Seven hypotheses regarding the role of anger for aggressive behavior were tested in an experimental exchange situation using male children as subjects. In previous studies, anger had not actually been employed as the intervening variable in a provocation/aggressive cue-aggression model. The results indicate a strong relationship between provocation and aggression which may be affected by the presence or absence of aggressive cues. However, the provocation-aggression relationship was not affected by the presence or absence of anger measured by systolic blood pressure. A separate analysis of the rate of aggression by number of acts versus the duration of aggressive acts suggests that in the presence of aggressive cues, when aggression may be expressed covertly, young men may return aggressive acts beyond reciprocity. (Author)

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DO YOU HAVE TO BE ANGRY TO BE AGGRESSIVE?¹

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This study is designed to examine further the role of aggressive cues in combination with provocation in causing aggression, while paying special attention to the problems of the role of anger which have been overlooked in previous research.

Imbedded in a complex interactive hypothesis examined in the "Champion" series² (for overviews see Berkowitz, 1962, 1965, 1969) is the idea that humans have to be angry to be aggressive. From several of the traditional studies originating out of Berkowitz's Wisconsin laboratories, an hypothesis has been generated that in the presence of appropriate (yet loosely defined) aggressive cues, if frustration-provocation leads to anger, then aggression is the probable result. Although the "Champion" model has been challenged and specified in several ways, little attention has been paid to potential problems with the crucial variable anger.

First, anger typically has been assessed with a post-manipulation mood check list. This mood questionnaire may not validly detect the presence of anger. It is possible that demand characteristics of laboratory situations (Adair, 1973) lead subjects to attribute anger to themselves. Second, authors in the "Champion" series have tested the multivariate hypothesis with anger as an intervening variable without directly controlling for anger to see if the relationship is substantially reduced. Anger usually has been associated with the frustration-provocation manipulation. Then provocation has been relabeled anger and associated with aggression (e.g., Berkowitz and Geen, 1966, 1967). This does not demonstrate necessarily that those who are angered are in fact those who are more likely to behave aggressively; nor does this allow for demonstrating

the possibility (which might be labeled partially intervening) whereby provocation may produce aggression both through anger and directly. None of the "Champion" series, and, in fact, no study of aggressive behavior, has tested the intervening link of anger directly in a simple three variable multivariate model of any fashion.

The major purpose of this study was to reexamine the role of anger in an aggressive exchange similar to the "Champion" studies. Two hypotheses concerning anger were derived from these studies: (1) provocation leads to anger; and (2) in the presence of aggressive cues, provocation will lead to aggression only if the subjects are angered (this is an alternative way of specifying anger as an intervening variable).

A subsidiary purpose of this study was to explore further the role of aggressive cues in combination with provocation. The fact that aggressive stimuli may have a modeling or cuing effect is consistent with a great deal of literature on modeling of aggression (Hicks, 1965; Wheeler and Smith, 1967; Bandura, Ross and Ross, 1961, 1963) but inconsistent with various studies where it appears that aggressive cues may have an inhibiting (Ellis, et al., 1971) or cathartic effect (Feshbach and Singer, 1971). As Geen (1968) indicates, the "Champion" series assumes that without aggressive cues provocation is unlikely to lead to aggression. Furthermore some studies have found a greater effect if the cues are associated with the provocateur (Berkowitz, 1965; Berkowitz and Geen, 1966; Geen and Berkowitz, 1967) whereas others have not (Berkowitz and LePage, 1967). From the "Champion" series, it is possible to expect to confirm two additional hypotheses: (3) if provoked, aggressive cues will tend to

increase the degree of aggression and that (4) the presence of associated cues will increase the degree of aggression even more.

Among the suggested alternative explanations for these findings concerning the effects of the media is one that involves the crucial role of anger. It is possible that, in those situations where anger is aroused, violence in media has a modeling or eliciting effect (in combination with provocation as suggested by the "Champion" series. Whereas in those studies in which anger was not aroused, violence in the media may have had a cathartic or inhibiting effect. Recently Ellis, et al., (1971), found that under certain conditions if the aggressive stimuli are associated with the provocateur, subjects would be relatively less aggressive than if cues are not associated. They also gave some indication that the presence of aggressive cues would serve to inhibit the degree of aggression in nonprovoked subjects. Their study suggested two additional hypotheses: (5) the presence of aggressive stimuli will serve to inhibit the degree of aggression in nonprovoked subjects; (6) the presence of associated aggressive stimuli will serve to inhibit aggression in nonprovoked subjects more than for those for whom stimuli are nonassociated.

Finally, although Berkowitz and his followers maintain that aggressive cues are a necessary condition which qualifies the frustration-aggression hypothesis, a perusal of such studies will quickly indicate that in those studies where aggression is exchanged (e.g., Berkowitz and Geen, 1966; Berkowitz and LePage, 1967), the strongest effect seems to be due not to the presence of aggressive cues but to the main effect of provocation. Hence the final prediction is that (7) regardless of level of anger, provocation will produce aggression.

Method

Subjects and design. Thirty-two subjects were selected from white male elementary school students; they were randomly assigned to each cell.³ The basic design was a three (aggressive stimuli) by two (provocation) factorial. Levels of exposures to aggressive stimuli included no aggressive stimuli, nonassociated aggressive stimuli and associated aggressive stimuli. Levels of provocation included high provocation or no provocation. Five subjects were randomly assigned to each cell. In addition to this basic design, anger was measured for each subject and served as a covariable in the analysis.

Aggressive stimuli. The nonaggressive stimulus condition was a three-minute presentation of a television scene in which two boys were shown in a playground playing a marble game. The boys were engaged in friendly and cooperative play. The nonassociated, aggressive stimulus condition involved the same two boys playing a similar marble game. In this instance, however, the boys were fighting over whose marble was on the ground, socking each other, pushing and shoving each other in order to get in position to take a turn. They wrestled each other to the ground and were seen in several clenches. The associated cue condition involved the same television scene as the nonassociated cues; subjects were told that the boys in the television scene came from the same school as their opponent in this particular experiment.

Provocation. A block stacking game was presented (Ulrich, 1967). The subject was asked to stack blocks on a student desk mounted on springs. The desk could be vibrated to knock over the blocks by means of a motor

hidden within it. A green light was mounted on the desk beside a button. (This button was not operative in this experiment.) Subjects were informed that they were competing for prizes in terms of the most blocks stacked on the vibrating desk. The provocation manipulation involved an ostensible other subject vibrating the subject's desk to prevent him from stacking blocks.

In the provocation condition the subject's desk was vibrated for three two-second intervals randomly interspersed during each of ten thirty-second stacking periods. In the no provocation condition the subject's desk was not vibrated.

Anger. Anger was indicated by means of a ten millimeter change from a base line measure of systolic blood pressure measured on a polygraph. This has been found to be a relatively reliable correlate of anger in a series of studies (Buss, 1961; Hokanson, et al., 1970). This measure was selected rather than a mood questionnaire on the assumption that (1) it might be less obtrusive than taking mood checklist data while an aggressive exchange was continuing and (2) because asking subjects about their anger after the exchange might be subject to distortion by self attribution of anger if they had aggressed.

Aggression. Aggression was measured in two ways. First, the number of foot pedal depressions (ostensibly a foot pedal depression shook the subject's opponent's desk) was counted. Second, the total time of pressing was recorded.

Procedure. Subjects were brought in one at a time during the school day. The assistant obtained the subject from his class and brought him

to a relatively isolated portion of the school in which there was a stage. The subject passed through a hall where a desk for the ostensible other subject was located. This desk looked identical with the one to which the subject was taken. Before being seated, the subject was introduced to the experimenter on the stage in full view of the equipment. The experimental booth was immediately off the stage and consisted of a 6 by 6 enclosure with a curtain blocking off the stage. The assistant introduced the instructions: "Hi, we'd like you to play a game with us where you have a chance to win one of these prizes. OK?" (assistant showed subject a basket full of toys) "Here's what we'd like you to do. We'd like you to take seven of these blocks and stack them seven high like this (assistant stacked the blocks to illustrate what she meant) with your right hand (assistant pointed to subject's right hand). Do you understand? While you're stacking blocks with your right hand, we'd like to listen to your left arm with this (pointed to the blood pressure cuff). Let me show you, OK?" (The assistant put on the cuff and waited for the experimenter to measure blood pressure.) "Do you see this green light? Whenever this green light goes on we want you to stack blocks. Whenever it goes off we want you to rest, OK? See this foot pedal? (assistant points to foot pedal) A kid from Arcadia School (a similar school in another part of town) is stacking blocks when you are. He can knock down your blocks by stepping on his pedal and you can knock down his blocks by stepping on your pedal. It shakes the desk like this" (assistant shook the desk). "Can you tell me what we want you to do so that we know that you understand?" (If the subject could not describe the

procedure, the directions were repeated.) "Before we begin I have to tell the other boy from Arcadia what to do. While I'm gone you can watch this TV program..." (introduced aggressive stimulus manipulation) "...of some kids from Arcadia playing" (associated cue condition) or "some kids playing" (no aggressive cues/nonassociated aggressive cues). The subject was randomly exposed to one of the aggressive stimuli conditions. After the TV film the assistant returned and told the subject, "when the green light goes on you can stack the blocks." The subject then played a series of ten thirty-second trials with a fifteen-second waiting period between trials. At the onset of the third trial the blood pressure, as a measure of arousal, was recorded. Upon completion of the ten trials, after a short pause, the subject's blood pressure was again taken and the subjects were examined as to what they thought about the video tape.

Results

Provocation and anger. The first hypothesis was: the greater the provocation, the greater the anger. Comparing the effects of provocation on anger, anger is significantly related to provocation ($p < .054$). Seven of the provoked subjects were angered. Only three of the nonprovoked subjects were angered.

Aggressive stimuli, provocation and aggression for angry subjects. The second hypothesis was: in the presence of aggressive cues, the greater the provocation the greater the aggression, if the subject is angered. Table 1 presents the means for both measures of aggression (the number of shakes and the length of shaking) by the provocation and aggressive stimuli

(TABLE ONE ABOUT HERE)

conditions. Table Two A presents tests of significance based upon a multiple analysis of variance for repeated measures employing the same variables as in Table One. Table Two B presents tests of significance based upon a multiple analysis of covariance for repeated measures which employs anger as the additional covariable. (A comparison of the latter two tables allows for a test to see whether anger is acting as an intervening variable.) This hypothesis does not receive support for two reasons. First, from a comparison of Tables Two A and B, the control for anger does not eliminate the association between provocation and

(TABLES TWO A AND B ABOUT HERE)

aggression. Thus anger is not the crucial intervening variable. Second, from the analyses of variance and covariance, it appears that the main effect of provocation is significant regardless of whether aggressive stimuli are present or not. (The main effect of provocation is significant; the interaction between provocation and stimuli is not). From the Duncan Multiple Range Test it appears that this is true for the number of shakes measure of aggression, but does not hold for the length of shakes. The provocation effect is only significantly different from nonprovocation for the aggressive stimuli conditions.

Provocation, aggressive stimuli and aggression. Hypothesis three suggests that regardless of anger, aggressive cues are expected to interact with provocation. More explicitly, if provoked, aggressive cues will increase the degree of aggression. This hypothesis is not supported by either multiple analysis of variance or the Duncan Multiple Range Test.

Provocation, associated stimuli and aggression. From Tables One and Two it is clear that hypothesis four, the hypothesis that associated

stimuli may interact with provocation and aggression, likewise receives no support. The presence of associated cues had neither a systematic nor a significant effect in increasing the degree of aggression beyond that of aggressive cues in general.

Inhibition. Hypotheses five and six predict that aggressive stimuli will inhibit the degree of aggression in nonprovoked subjects. The failure to find statistical interaction for a relationship between provocation and aggressive stimuli and the failure for there to be a significant decrease in aggression in the table of cell means indicates that there is no support for the role of aggressive stimuli as inhibitors whether associated with the nonprovocateur or not associated.

Provocation and aggression. As indicated above, whether anger or aggressive stimuli are controlled or not, provocation is significantly related to aggression.

Discussion

The role of anger. In previous research, anger has been assumed to be synonymous with provocation. Provocation, not anger, has been related to and associated with aggression. Yet anger has kept its important status as an intervening variable. In this research, where anger was controlled separately, anger did not appreciably reduce the provocation-aggression relationship. Thus, for these young males anger did not appear to be a crucial intervening variable. On the basis of this research it seems plausible that a reanalysis of past research in the "Champion" studies might also disconfirm the role of anger.

The role of aggressive cues. If provocation and aggressive stimuli are considered with their joint effect upon the combined number of shakes and length of shaking aggression measures, or if a more conservative multiple analysis of covariance is considered to assess the statistical significance of their joint effects, one might conclude that there is no significant combined effect of provocation and cues upon aggressive behavior. However, if it would be legitimate to consider the length of shaking variables alone, then the Duncan Multiple Range Tests suggest that the conditions in which aggressive stimuli are combined with provocation are significantly different from the no provocation condition, but that provocation without aggressive stimuli is not significantly different from no provocation. That is, in terms of the degree of aggression measured by length of shaking alone, provocation is not significantly different from no provocation unless aggressive stimuli are combined with that provocation.

Why might it be legitimate to consider length of shaking alone? In this, and past research, the experimental confederate is the first to aggress. Subjects seem to strike back a similar number of times. This does not violate what Gouldner (1960) labels a strong norm of reciprocity in American culture. A more subtle way to intensely respond to the provocation of the opponent involves varying the intensity in terms of the length of time, rather than the number of times one reciprocates. Note that the subjects received sixty seconds worth of shaking. The time subjects reciprocated is only surpassed in the aggressive stimuli conditions. Human subjects may be responding to the total context of the

experimental situation which includes potential evaluation by the experimenter. Generally, adults viewing children do not reinforce aggressive behavior. However, in American culture adults may reinforce reciprocity. Given such stimulus conflict, the resolution may be to appear to be reciprocating while subtly responding with greater aggression. The validity of this speculation is contingent, of course, upon future research.

The role of provocation. In this, as in much previous research, the strongest relationship was between provocation and aggression. Provocation has often been labeled frustration (Berkowitz, 1969) but it might be conceptually profitable to consider it attack (Buss, 1961; Geen, 1968) in a competitive situation. Several studies of aggressive behavior, whatever else their rationale to the subject, involve some implicit or explicit contest. Minimally, one is compared to other subjects who are trying to win the experimenters' esteem or compete (i.e., "perform") under stress. Perhaps, rather than frustration, the attack under competitive conditions operates to change the situation to one of competitive exchange where the controlling variables are those of consequences (reinforcers) not antecedent conditions (see Hokanson, 1970, or Ellis, et al., 1971). We need further research in similar situations which more systematically and explicitly varies consequences to fully explicate the role of provocation.

In sum, it is clear that young men will return aggression when provoked whether angered or not and whether aggressive cues are present or not. However, in some circumstances, they may tend to be more aggressive if they have been exposed to aggressive stimuli, particularly when such

aggression can be covertly expressed. From this study we might conclude that these subjects reciprocated aggression when provoked and covertly increased their aggression beyond reciprocity in the presence of aggressive cues. Thus, studies in aggression may profit by turning their attention from anger to reciprocity.

Footnotes

1. This research received partial support from a Western Michigan University Faculty Research Grant and from The Behavior Research Development Center. I wish to thank S. Tong and D. Steir for experimental assistance and G. Blevins and S. Robin for comments on the manuscript.
2. The "Champion" series is so titled because in several of the studies the subjects were exposed to a manipulation in which some saw the boxing sequence in the movie of the above name in which Kirk Douglas was the star. In those studies where the aggressive stimuli were to be associated with the experimental confederate the confederate was ostensibly named "Kirk."
3. Two subjects were eliminated because they were personally acquainted with the experimenter.
4. It is only in these conditions that the time of shaking is significantly different from nonprovocation conditions.

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TABLE ONE
Mean Table Shakes
by Degree of Provocation and Type of Stimuli

	No Aggressive Stimuli	Nonassociated Aggressive Stimuli	Associated Aggressive Stimuli
	<u>Number of Shakes</u>		
Provocation	37.2a*	37.6a	52.0a
No Provocation	1.6b	5.2b	2.6b
	<u>Length of Shakes</u>		
Provocation	39.2ab	102.1a	83.1a
No Provocation	.7b	2.2b	.9b

* Numbers with similar subscripts are not significantly different at .05, according to Duncan Multiple Range Test.

TABLE TWO A

Multiple Analysis of Variance for the Effects
of Type of Aggressive Stimuli and Degree of Provocation,
on the Number and Time of Table Shakes

Source of Variance	df	F	Probability
Provocation	2	24.790	.000
Aggressive Stimuli	4	1.133	.353
P. x A.S.	4	2.177	.086

TABLE TWO B

Multiple Analysis of Covariance for the Effects
of Type of Aggressive Stimuli and Degree of Provocation
on the Number and Time of Table Shakes,
When Degree of Arousal is Controlled

Source of Variance	df	F	Probability
Provocation	2	19.131	.000
Aggressive Stimuli	4	1.461	.229
P. x A.S.	4	2.121	.093
Anger (within cells regression)	2	.057	.944